RESEARCH ROUNDUP 1963

U. S. DEPARTMENT OF AGRICULTURE
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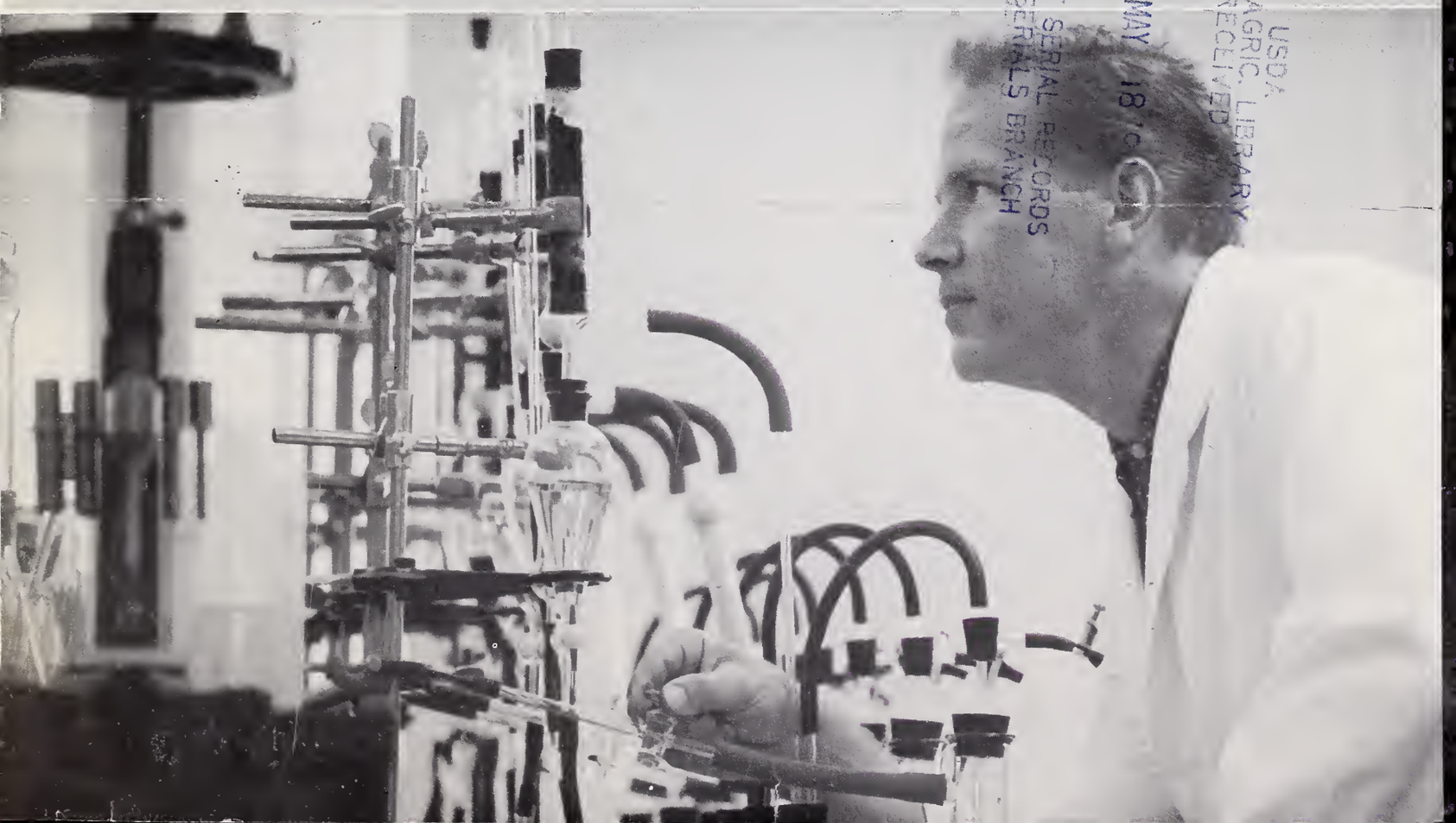
Another year of research by the U.S. Department of Agriculture has produced many advances benefiting farmers, businessmen, and consumers. Highlights of some of the achievements of USDA's Agricultural Research Service in 1963 are pictured here.

ARS scientists have isolated an attractant substance from houseflies for use in controlling them. The scientists are also testing methods of controlling this pest physically. Here, a researcher is releasing flies in a cage to test the use of light, sound, and radio waves to draw them to traps or baits. BN–20514 (Agricultural Research, September 1963, page 10)

ARS scientists are learning how soil microorganisms break down pesticides and, in some cases, detoxify them. Their goal is to improve effectiveness of pest-control materials and to prevent questionable residues in the soil. BN–20929

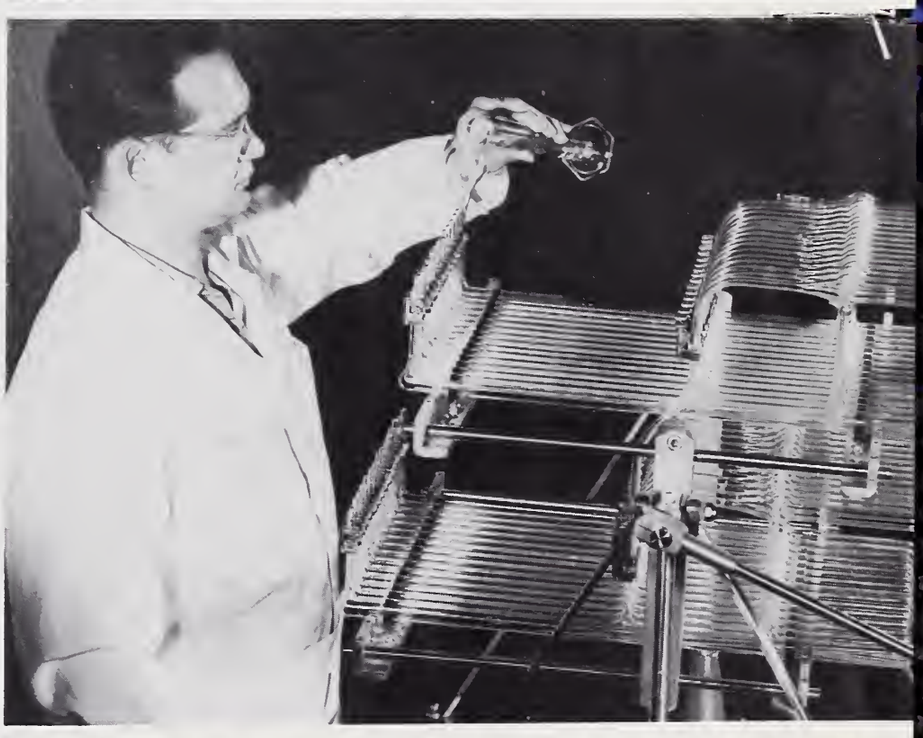


Research projects cover many areas . . . . .

LEFT—The cockroach frequently becomes a "guinea bug" for ARS entomologists in their search for attractants, repellants, and other new tools for combatting insect pests.

The value of powerful attractants was dramatically demonstrated this year when entomologists wiped out oriental fruit flies on Rota, a Pacific island 37 miles north of Guam. A research-developed compound that had an irresistible attraction to the male flies lured them to an insecticide placed in areas away from crops. Annihilation of the males stopped reproduction and the species was eradicated. BN–20222 (Agricultural Research, October 1963, page 7)

UPPER RIGHT—A sample of a new high-starch paper is tested for tensile strength. ARS chemists have found a way to increase the amount of starch used in producing paper without making the paper brittle, a limiting factor in the past. This achievement can lead to the use of large amounts of cereal derivatives along with wood pulp in manufacturing paper with added transparency and resistance to water penetration. The new process also has possibilities in fiberboard manufacture. BN–19056 (Agricultural Research, May 1963, page 5)



CENTER—In a broad research effort to develop new crops for industrial markets, which could provide farmers with additional income, ARS scientists are studying foreign species of plants for sources of oil, fibers, gums, and protein seed meals. Among plants that show particular promise are varieties of crambe, parsley, cape marigold, indian ironweed, kenaf, and meadowfoam. Here a researcher separates the various components of seed oils for study. BN–18076 (Agricultural Research, January 1963, page 9)

LOWER RIGHT—An ARS engineer adjusts a special motion picture camera, used to photograph raindrop splashes that can be studied in very slow motion. Each drop, falling from a 30-foot tower, triggers the battery of lights as it falls toward the impact area. This basic study is helping scientists learn the how and why of soil erosion so that they can develop better ways to conserve soil and prevent build up of damaging sediment in streams and reservoirs. BN–20524

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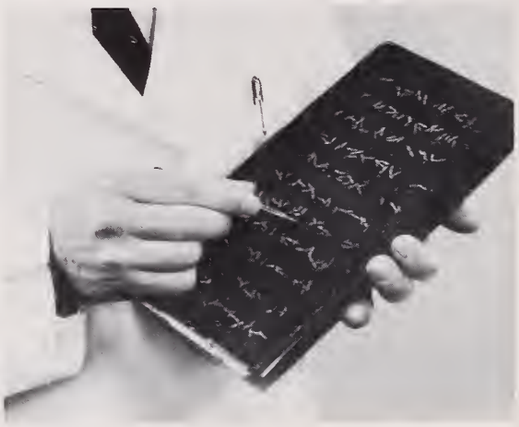
ABOVE—Milky disease spores, now used by many homeowners to control Japanese beetles, are produced in infected beetle grubs. But this method is not practical for mass-producing spores. ARS scientists are trying to mass-produce them artifically. They have succeeded in growing the bacterial cells and are now studying how to induce these cells to form spores that will survive and remain infective. This hypodermic needle has a small electrode that measures oxygen level in the diseased grub's "blood"; the level goes down as the cells multiply but rises when they begin to form spores. BN–19707 (Agricultural Research, August 1963, page 3)

ABOVE—ARS research has proved that normal home laundry methods cannot be depended on to destroy disease organisms, especially during family sickness. Bacteriologists have found four compounds—a chlorine, a quarternary, a pine oil, and a phenolic—that are effective disinfectants. BN–20229



RIGHT—An ARS scientist holds nearly 200 chenopodiaum plants in a 5- by 10-inch flat. Growth of this weed—a promising test plant for researchers and students—can be regulated by light to make it mature in less than a month and grow no bigger than a thumbnail. BN–19557

BELOW—Home gardeners can get all-year service from this 6- by 6-foot portable hotbed designed by an ARS horticulturist. Through the summer it can be used to start cuttings; in the fall and winter it protects half-hardy and tender plants. The model shown is equipped with automatic spray valves to water shrub cuttings. BN–20859 (Agricultural Research, December 1963, page 7)